Sky and TELESCOPE

INDEX to Volume 53

January to June, 1977

Titles

About Our Cover, 3
Adonis Recovered, 243
Ancient Astronomical Records from the Orient, *F. Richard Stephenson* and *David H. Clark*, 84
April's Partial Lunar Eclipse, *Joseph Ashbrook*, 423
Armenian 2.6-meter Telescope Dedicated, *David S. Evans*, 13
Binary-Star Speckle Interferometry, *Harold A. McAlister*, 346
Circulation Director Retires, 172
Communicating Astronomy in Vancouver, *David A. Rodger*, 104
Diameters of Minor Planets, *David Morrison*, 181
Discovering the Rings of Uranus, *James L. Elliot, Edward Dunham*, and *Robert L. Millis*, 412
Donald Howard Menzel, *Leo Goldberg*, 244
Events of 1977 in the Graphic Time Table, 39
Far-Ultraviolet Rocket Survey of Orion, A, *George R. Carruthers* and *Chet B. Opal*, 270
"First Light" for the ESO 3.6-meter Telescope, *S. Laustsen*, 97
Five College Radio Astronomy Observatory, The, *T. Arny* and *G. Valeriani*, 431
Henry E. Paul: An Appreciation, *George T. Keene*, 177
History of the Earth's Atmosphere, A, 266
Innisfree Meteorite, The, 339
Laboratory Exercises in Astronomy — Pulsars, *Kurtiss J. Gordon*, 178
Looking South from Siding Spring, *C. A. Federer, Jr.*, 186
NASA Plans for 1977, 190
New Radio Astronomy, A, *Carolyn Sumners*, 344
New Trends in Celestial Photography, *Alex G. Smith*, 24
1977 Solar Eclipse in Colombia, The, *Allen A. Tinker*, 267
Notes on Soviet Space Astronomy, *James E. Oberg*, 92
Nova Sagittae 1977, 163
Panorama of Observatories, 332
Partial Lunar Eclipse Next Month, The, 191
Progress on the CFH Reflector, 254
Rings of Uranus, The, 331
Sequoia Star Stomp, *Jean Henry*, 262
Some New Developments in X-Ray Astronomy, *Louis C. Green*, 340
Some Photographs of Young Moons, 440
Story of AM Herculis, The, *William Liller*, 351
Summer Science Program, A, *D. A. Pierce*, 175
Super-Wide-Angle Photographs of the Milky Way, *Theodor Schmidt-Kaler* and *Wolfhard Schlosser*, 436
Thomas Clap and the Terrestrial Comets, *Horace A. Smith*, 420
Totality from Zanzibar to Merrimbula, 4
Touring American Observatories, *Norman Sperling*, 14
Two Solar Eclipses in 1977, 184
Vikings to Earth: "It's Cold Up Here!" *J. Kelly Beatty*, 417
W. E. Wilson and the Daramona Observatory, *Brian Warner*, 108
What's New on the Moon? *Bevan M. French*, I, 164; II, 257
World's Astronomers Meet at Grenoble, *John B. Irwin* and *Joseph Ashbrook*, November, 1976; correction to, 128

Authors

Adams, Robert McC., amateur observatory report, 336
Aranoff, Yaakov, letter, 411
Arny, T., and *G. Valeriani*, The Five College Radio Astronomy Observatory in Massachusetts, 431
Ashbrook, Joseph, April's Partial Lunar Eclipse, 423
Astronomical Scrapbook, 12, 173, 356
book review, 59
Eclipses of Jupiter's Satellites, 230
see also *Irwin, John B.*
Bakich, Michael, see *Victor, Robert C.*
Beatty, J. Kelly, Vikings to Earth: "It's Cold Up Here!" 417
Benton, Julius L., Jr., letter, 354
Bortle, J. E., The 1976 Apparition of Periodic Comet d'Arrest, 152
Carle, Jackson T., A Foucault Tester for Short-Focus Mirrors, 481
Carroll, Joseph E., letter, 23
Carruthers, George R., and *Chet B. Opal*, A Far-Ultraviolet Rocket Survey of Orion, 270
Chartrand, Mark R., III, book review, 130
Clark, David H., see *Stephenson, F. Richard*
Cohen, Nathaniel, book review, 468
Cox, Robert E., book reviews, 58, 469
Cox, R. E., and *Sinnott, R. W.*, conductors, Gleanings for ATM's, 64, 139, 220, 306, 391, 475
DeVorkin, David H., book review, 379
di Cicco, Dennis, Photographing the Moon's Shadow, 323
Dunham, David W., May 14th Occultation of Venus, The, 376
Occultation Highlights for the Year 1977, 71
Dunham, Edward, see *Elliot, James L.*
Elliot, James L., Edward Dunham, and *Robert L. Millis*, Discovering the Rings of Uranus, 412
Evans, David S., Armenian 2.6-meter Telescope Dedicated, 13
Federer, Charles A., Jr., book reviews, 212, 298
Looking South from Siding Spring, 186
Fernie, J. D., book review, 295
Findlay, John W., book review, 464
Fireman, Edward L., book review, 296
Fomalont, Edward B., book review, 385
French, Bevan M., What's New on the Moon? — I, 164; II, 257
Goldberg, Leo, Donald Howard Menzel, 244
Gordon, Kurtiss J., Laboratory Exercises in Astronomy — Pulsars, 178
Grebner, Art, An Easily Transported 20-inch Telescope, 224
Green, Louis C., Some New Developments in X-Ray Astronomy, 340
Hackman, Stanley, amateur observatory report, 334
Harris, William E., letter, 354
Henderson, Janice A., book review, 380
Henry, Jean, Sequoia Star Stomp, 262
Heppting, G. T., amateur observatory report, 332
Hillenbrand, Robert, book review, 297
Hopkins, Boyd B., amateur observatory report, 337
Houston, Walter Scott, Deep-Sky Wonders, 76, 234, 320, 492
Irwin, John B., book review, 211
Irwin, John B., and *Joseph Ashbrook*, World's Astronomers Meet at Grenoble, November, 1976; correction to, 128
Jacchia, Luigi G., book review, 214
Jones, Paul, young moons, 440
Keene, George T., Henry E. Paul: An Appreciation, 177
Lanzerotti, L. J., letter, 83
Laustsen, S., "First Light" for the ESO 3.6-meter Telescope, 97
Liller, William, letter, 83
Story of AM Herculis, The, 351
Loughhead, R. E., book review, 132
Louth, Howard, A Large Maksutov with Newtonian and Cassegrain Foci, 139
Lovi, George, letter, 91
Rambling Through . . . (current month) Skies, October, 1976, correction to, 12; 38, 120, 200, 284, 368, 450
Mayall, R. Newton, book review, 57
Mayer, Ben, amateur observatory report, 333
McAlister, Harold A., Binary-Star Speckle Interferometry, 346
Merkle, Fred, amateur observatory report, 336
Millis, Robert L., see *Elliot, James L.*
Moon, Terry, Making a Vinyl Dust Cap, 68
Morrison, David, Diameters of Minor Planets, 181
Ney, Edward P., book review, 133
Oberg, James E., Notes on Soviet Space Astronomy, 92

CURRENT PERIODICAL SERIES

PUBLICATION NO: 207

TITLE: SKY AND TELESCOPE

VOLUME: 53 ISSUES: 1 - 6
54 1 - 6

DATE: January - December 1977

NOTICE: This periodical may be copyrighted, in which case the contents remain the property of the copyright owner. The microfilm edition is reproduced by agreement with the publisher. Duplication or resale without permission is prohibited.

University Microfilms International, Ann Arbor, Mich.

MICROFILMED – 1977

O'Dell, S. L., and *D. H. Roberts*, letter, 174
Olsen, Frank, young moons, 440
Opal, Chet B., see *Carruthers, George R.*
Oravec, Edward G., book review, 384
Osborne, Thomas, An Eclipse Flight Over East Africa, 32
Overbeek, M. D., book review, 382
Page, Thornton, book review, 299
Patterson, Kenneth A., letter, 174
Peters, William T., and *Robert Pike*, The Size of the Newtonian Diagonal, 220
Peterson, Thomas C., amateur observatory report, 337
Pierce, David A., A Summer Science Program, 175
Pike, Robert, see *Peters, William T.*
Polman, Jorge, A Homemade Filar Micrometer, 391
Poncet, Adrien, An Equatorial Table for Astronomical Equipment, 64
Provin, Robert W., see *Wallis, Brad D.*
R. E. C., see *Cox, Robert E.*
R. W. S., see *Sinnott, Roger W.*
Rison, William E., amateur observatory report, 335
Rizzo, Patrick, book review, 213
Roberts, D. H., see *O'Dell, S. L.*
Rodger, David A., Communicating Astronomy in Vancouver, 104
Rosen, Edward, book review, 465
Schenk, Harald, young moons, 440
Schlajke, Rudolf, A "Porter's Folly" Mounting in Europe, 475
Schlosser, Wolfhard, see *Schmidt-Kaler, Theodor*
Schmidt-Kaler, Theodor, and *Wolfhard Schlosser*, Super-Wide-Angle Photographs of the Milky Way, 436
Seiler, Michael, letter, 354
Sinnott, Roger W., W. A. Bradfield and His Comet Seeker, 306
see also *Cox, R. E.*
Smith, Alex G., New Trends in Celestial Photography, 24
Smith, Horace A., Thomas Clap and the Terrestrial Comets, 420
Sperling, Norman, Touring American Observatories, 14
Stephenson, F. Richard, and *David H. Clark*, Ancient Astronomical Records from the Orient, 84
Sullivan, Woodruff T., III, book review, 130
Sumners, Carolyn, A New Radio Astronomy, 344
Tichenor, Clyde L., A Private Observatory Association in California, 115
Tinker, Allen A., The 1977 Solar Eclipse in Colombia, 267
Townsend, Peggy, Astrophotographers Meet in California, 362
Trombino, Don, Amateur Astronomy in Poland, 195
Valeriani, G., see *Arny, T.*
Victor, Robert C., Mars, Jupiter, and Saturn for the Coming Year, 125
Observing Venus near Inferior Conjunction, 207
Planets Mercury and Venus During 1977, The, 47
Sun, Moon, and Planets This Month, The, 46, 124, 206, 290, 374, 460
Venus and Mars in the Morning Sky, 375
Victor, Robert C., and *M. Bakich*, letter, 91
Vsekhsvyatsky, S., letter, 411
Wallentine, Derek, letter, 174
Wallis, Brad D., and *Robert W. Provin*, On the Road to Better Astronomical Photographs — I, 314; II, 399; III, 484
Warner, Brian, W. E. Wilson and the Daramona Observatory, 108
Wilson, Bob, letter, 174

Departments and Features

Amateur Astronomers —
Active Canadian Amateur, 116
Amateur Astronomy in Poland, 195
Amateur Briefs, 34, 117, 280, 364, 445
American Meteor Society, 445
Astrophotographers Meet in California, 362
Bok Astronomy Awards, 117
Clubs Pair for Tour and Newsletters, 443
Comet Award, 198
Coming Astronomical Gatherings in 1977, 198, 278, 363
Eclipse Flight Over East Africa, An, 32
International Astronomical Youth Camp 1977, 197
Large Observatory for Amateurs in the Northwest, A, 276
Private Observatory Association in California, A, 115

Astronomical Scrapbook —
About an Astronomical Woodcut, 356
Julius Schmidt and His Book About Lunar Eclipses, 173
Some Naked-Eye Observations of Venus, 12

Books and the Sky —
Astronomy for the Southern Hemisphere, Lionel Warner, 382
Astronomy: The Structure of the Universe, William J. Kaufmann, III, 299
Astronomy Transformed, David O. Edge and Michael J. Mulkay, 464
Astronomy with Binoculars, J. Muirden, 384
Atlas Obratnoi Storony Luny, Chast' III, Yu. N. Lipsky, editor, 214
Beginner's Guide to Astronomical Telescope Making, James Muirden, 469
Big Ear, John Kraus, 130
Black Holes, Quasars, and the Universe, Harry L. Shipman, 211
Cosmological Letters on the Arrangement of the World-Edifice, J. H. Lambert, 380
Galileo Against the Philosophers, Stillman Drake, editor, 465
Handbook of Iron Meteorites, Vagn F. Buchwald, 296
Illustrated Encyclopedia of Astronomy and Space, Ian Ridpath, editor, 213
Infrared: The New Astronomy, David A. Allen, 133
Man Discovers the Galaxies, Richard Berendzen, Richard Hart, and Daniel Seeley, 295
Mapping of the Moon: Past and Present, Zdenek Kopal and Robert W. Carder, 59
Meteorology: The Earth and Its Weather, Joseph S. Weisberg, 298
Methods of Experimental Physics, Vols. 12B and 12C, M. L. Meeks, editor, 385
North Star to Southern Cross, Will Kyselka and Ray Lanterman, 212
Our Changing Universe, John Gribbin, 468
Quasars, Pulsars, and Black Holes, Frederic Golden, 130
Solar Flares, Zdenek Svestka, 132
Space Science and Astronomy: Escape from Earth, Thornton Page and Lou Williams Page, editors, 297
Space Telescope, The, National Aeronautics and Space Administration, 58
Trilogy of "Time" Instruments, Paul R. MacAlister and Flolydia M. Etting, 57
Whisper and the Vision, The, Donald Fernie, 379

Celestial Calendar —
Double Stars for June Evenings, 461
Eclipses of Jupiter's Moons, 53
Jupiter's Satellites, 53, 124, 206, 290
Kalliope in the Pleiades, 127
Mars, Jupiter, and Saturn for the Coming Year, 125
May 14th Occultation of Venus, The, 376
Mercury in the Evening Sky, 209
Meteors, 48, 292, 374, 460
Minima of Algol, 54, 128, 208, 292, 377, 462
Minor Planet Notes, 460
Moon Phases and Distances, 54, 128, 208, 292, 377, 462
More Uranus-Ring Events? 461
Nysa Crosses the Beehive, 208
Observing Saturn's Moons Titan and Iapetus, 291
Observing Venus near Inferior Conjunction, 207
Occultation Reminder, 126
Planets Mercury and Venus During 1977, The, 47
Three Minor Planets for Binoculars, 49
Uranus, Neptune, and Pluto in 1977, 51
Uranus To Occult a Star, 209
Variable Star Maxima, 54, 128, 208, 292, 377, 462
Venus and Mars in the Morning Sky, 375
Venus in the Evening Sky, 127

Front-cover photographs —
Australian Eclipse Mosaic, 1
Circumpolar Stars from Australia, 161
Denver Amateur's Observatory, A, 329
Dome for 3.6-meter Telescope in Hawaii, 241
MacMillan Planetarium, 81
Rings of Uranus, The, 409

Gleanings for ATM's —
Easily Transported 20-inch Telescope, An, 224
Equatorial Table for Astronomical Equipment, An, 64
Foucault Tester for Short-Focus Mirrors, A, 481
Homemade Filar Micrometer, A, 391
Large Maksutov with Newtonian and Cassegrain Foci, A, 139
Making a Vinyl Dust Cap, 68
"Porter's Folly" Mounting in Europe, A, 475
Size of the Newtonian Diagonal, The, 220
W. A. Bradfield and His Comet Seeker, 306

In the Current Journals, 20, 111, 252, 358, 427

Letters, 23, 83, 174, 354, 411

New Books Received, 61, 135, 216, 301, 388, 471

News Notes —
Amateur Astrophotographer, 111
Astronomical Brochures, 429

Astronomical Leader Dies, 111
Asymmetry of Saturn's Ring A, 357
Black Hole in Messier 15? A, 172
Computer-Enhanced Photographs of Galaxies, 170
Eggen's Star Not Nearby, 107
ERDA Chooses Colorado, 357
Escaping Globular Cluster, An, 20
HEAO-A Launch, 252
Hebe Occults a Star, 427
High-Latitude Reflection Nebulosities, 20
How Much Deuterium? 253
How X-ogen Was Identified, 22
Inside Messier 11, 427
Large Antarctic Meteorite, 252
Lowell Director, 256
Methane Frost on Pluto, 172
Minor Planet 1983 Bok, 430
Minor Planet 1976 UA, 20 (correction, 215)
More About Nova Vulpeculae, 23
New Look at the Loop Nebula, A, 112
Next Generation Telescope, The, 428
Older Universe, 343
Reports on Neptune and Uranus, 429
Rossi Honored, 252 (correction and amplification, 422)
Rotation of Mercury, The, 21
Skylab Optics, 427
Soviet 6-meter Telescope, 111
Space for Women, 189
Star Tests of a "Rubber Mirror," 429
Structure of the Sun's Magnetic Field, 357
Uganda and Mars, 429
Viking Activities Resumed, 96
Whither Thou Goest 111

Observer's Page —
Amateurs Observe the New Trapezium Variable, 319
Cloud Shadow at Sunset, A, 74
Deep-Sky Wonders, 76, 234, 320, 492
1976 Apparition of Periodic Comet d'Arrest, The, 152
Observations of Eclipses of Jupiter's Satellites, 230
Observers' Notebook, 235
Occultation Highlights for the Year 1977, 71
On the Road to Better Astronomical Photographs, I, 314; II, 399; III, 484
Orders for "Double Stars," 112
Photographing the Shadow of the Moon, 323
Reports on November's Penumbral Lunar Eclipse, 149
Sunspot Numbers, 77, 157, 236, 324, 405, 492
Telescopic Meteors, 324

Rambling Through . . . (current month) Skies, October, 1976, correction to, 12; 38, 120, 200, 284, 368, 450

Southern Stars, 45, 203, 457

Stars for . . . (current month), 38, 120, 200, 284, 368, 450

Sun, Moon, and Planets This Month, The, 46, 124, 206, 290, 374, 460

Selected Topics and Celestial Objects

This listing is not intended to be exhaustive and does not supplant the other parts of the index. For example, material in such regular features as Books and the Sky is ordinarily indexed only under the Departments and Features section.

Amateur astronomers: American Meteor Society, 445; Astrophoto II, 362; comet award, 198; cooperation between clubs, 443; Goldendale Observatory, 276; Poland, 195; Polaris Observatory Association, 115; Salisbury, Rhodesia, 280

Artificial satellites and spacecraft: HEAO-A, 252; NASA plans for 1977, 190; Saiyut 4 and 5, 94; Skylab optics, 427; Soviet space astronomy, 92; Vikings, 96, 417

Asteroids: Adonis recovered, 243; diameters, 181; 6 Hebe occults star, 427; 944 Hidalgo, 235; 1983 Bok, 430; 1976 UA, 20

Astronomy education: at Burke Baker Planetarium, 344; in National Parks, 262; laboratory exercise, 178; summer science program, 175

Atmosphere: cloud shadows, 74; evolution of, 266

Black holes: in M15?, 172

Clusters: Open — M11, 427; M35, 234; NGC 1883, 235; NGC 2112, 76; NGC 2141, 77; NGC 2158, 234; NGC 2169, 77; NGC 2186, 77; NGC 2192, 235; NGC 2194, 77; NGC 2281, 234. Globular — escaping, 20; in galaxy M87, 354; Kron 3, 100; M15, 172; M22, 403; NGC 4147, 493; NGC 5694, 20

Comets: hunting, 306; 1974b Bradfield, 311; 1976e d'Arrest, 152

Constellation study: Bootes, 368; Leo, 284; Northern Arrow, 411; Orion, 120; south polar region, 187; Virgo, 368

Cosmology: age of universe, 343; deuterium abundance, 253; Hubble diagram, 174

Double and multiple stars: homemade micrometer, 391; speckle interferometry, 346

Earth: evolution of atmosphere, 266

Eclipses: photographing moon's shadow on the ground, 323; Schmidt's book on lunar, 173; January 18, A.D. 120, solar, 89; October 23, 1976, solar, 3, 4, 32; November 6-7, 1976, lunar, 149; April 3-4, 1977, lunar, 423; April 18, 1977, solar, 184; October 12, 1977, solar, 185, 267

Fiction, astronomical: *Two on a Tower,* 280

Galaxies: dwarf in Horologium, 100; dwarf in Sculptor, 101; Stephan's Quintet, 170; M33, 27, 110, 484; M51, 13, 399, 486, 492; M64, 492; M87, 171, 354; NGC 55, 101; NGC 1365, 102; NGC 1808, 103; NGC 2903, 320; NGC 3162, 320; NGC 3177, 320; NGC 3190, 320; NGC 3193, 320; NGC 3226, 320; NGC 3521, 320; NGC 4565, 486; NGC 6946, 13; NGC 7479, 13

History: ancient oriental astronomy, 84, 354; astronomical woodcut, 356; Clap, T., 420; Daramona Observatory, 108; Galileo, 465; Lambert, J. H., 381; Menzel, D. H., and the sun, 244; radio astronomy, 464; Schmidt, J., and lunar eclipses, 173

Jupiter: observations of satellites' eclipses, 230; photographs, 485; shadows cast by, 174

Light: gravitational deflection, 23; speckle interferometry, 346

Mars: maar craters, 429; Phobos, 420; Viking results, 417

Mercury: rotation period, 21

Meteorites: Antarctic, 252; Innisfree, 339

Meteors: American Meteor Society, 445; Clap's theory, T., 420; March 7, 1976, fireball, 174; telescopic, 324

Milky Way galaxy: space motion, 111; superwide-angle photography, 436

Moon: Mare Orientale, 166; motion, 450; present knowledge, 164, 257; young crescents, 91, 174, 440

Nebulae: high-latitude reflection, 20; missing Herschel, 493. Diffuse — California, 489; Dumbbell, 110, 401; Horsehead, 487; Lagoon, 400; Loop, 110, 112; Omega, 402; Orion, 108, 488, 491; Tarantula (30 Doradus), 99; Trifid, 400, 403; IC 405, 490. Planetary — M57, 28; NGC 7293 (Helix), 26, 404

Neptune: rotation period, 430; temporary clouds?, 429

Novae: Vulpeculae 1976, 23; Sagittae 1977, 163

Observatories: touring American, 14; Byurakan, 13; European Southern, 98; Five College Radio Astronomy, 431; Mauna Kea, 254; Siding Spring, 188

Observatories, amateur: Denver, Colo., 332; Gadsden, Ala., 337; Goldendale, Wash., 276; Grass Valley, Calif., 337; Lawrenceburg, Tenn., 336; Lockwood Valley, Calif., 115, 333; Neosho, Mo., 336; Pisgah, Md., 335; Portsmouth, England, 334; Sedro Woolley, Wash., 145

Occultations: by Hebe, 427; by Uranus, 331, 412

Personal notes: Bradfield, W. A., 306; Chilton, K. E., 116; Hoag, A. A., 256; Magnusson, O. C., 446; Menzel, D. H., 111, 244; Paul, H. E., 111, 177; Rossi, B., 252, 422; Schmidt, J., 173; Wilson, W. E., 108

Photography: better amateur, 314, 399, 484; computer enhancement, 170; new trends, 24; super-wide-angle, 436

Planetariums: Houston, 344; Vancouver, 104

Pluto: methane frost on, 172

Pulsars: laboratory exercise, 178

Radio astronomy: Five College Radio Astronomy Observatory, 431; history, 464; pulsars, 178; X-ogen, 22

Saturn: asymmetry of ring A, 357; simultaneous observing, 354

Solar power: ERDA, 357

Space (see Artificial satellites and spacecraft)

Stars: Eggen's not nearby, 107; neutron, 343; ultraviolet spectra, 270; visibility in twilight, 236

Sun: amateur observing manual, 236; magnetic field, 357; neutrino test, 83

Supernovae: early oriental, 90; optical remnant of SN 1006, 22

Telescopes and telescope making: Amici prisms, 235; cartoons, 66, 482; equatorial table, 64; filar micrometer, 391; Newtonian-diagonal size, 220; next generation, 428; "Porter's Folly," 475; seeing compensation, 429; vinyl dust caps, 68; 6-inch comet seeker, 306; 10.8-inch Maksutov, 139; 12-inch Newtonian, 475; 20-inch portable, 224; 24½-inch Cassegrain, 276; 2.6-meter Byurakan reflector, 13; 3.6-meter ESO, 98; 3.6-meter Mauna Kea, 254; 6-meter Soviet, 111

Ultraviolet astronomy: survey of Orion, 270

Uranus: rings, 331, 411, 412, 461; rotation period, 430

Variable stars: AM Herculis, 351; Theta[1] Orionis A, 319

Venus: daytime visibility, 12

Women: astronomical careers for, 189

X-ray astronomy: AM Herculis, 351; bursters, 340; HEAO missions, 252; historical note, 422; new developments, 340

Sky and TELESCOPE

INDEX to Volume 54

July to December, 1977

Titles

Amateur Progress Seen at Boulder, 278
AN Ursae Majoris — Another AM Herculis? *George S. Mumford,* 194 (correction, 478)
Astronomer's Impressions of Ancient Egypt, An, *David A. Allen,* 15
Case of the Setting Sun, The, *John B. Irwin,* 167
Comsat Revolution, The, *J. Kelly Beatty,* 4
Cornell's 25-inch Training Telescope, *J. R. Houck* and *G. E. Gull,* 264
Cosmology Today, *Louis C. Green,* 180
Dazzling Czechoslovakian Fireball, 475
Discovering the Rings of Uranus, *James L. Elliot, Edward Dunham,* and *Robert L. Millis,* June, 1977; correction to, 173
Eclipse at Sea, *Dennis di Cicco,* 470
Eclipses of Iapetus by Saturn's Rings, 190
Eight Feet of Solar Spectrum, *O. Richard Norton,* 176
First Tests of the Irénée du Pont Telescope, *Horace W. Babcock,* 90
From the NASA "Oops!" File, 466
Laboratory Exercises in Astronomy — The Crab Nebula, *Owen Gingerich,* 378
Looking Back: 20 Years in Space, 259
MMT Update, 9
New West German Planetarium, A, *Hans-Ulrich Keller,* 375
Ninth Riverside Convention, *Ashley McDermott* and *Dennis di Cicco,* 100
Observing Equipment for Amateurs, 355
On the Road With Better Bumper Stickers, 32
Out from Under the Cosmic Censor: Stephen Hawking's Black Holes, *D. Overbye,* 84
Partial Phases of This Month's Solar Eclipse, 276
Photoelectric Observing of Occultations, *David S. Evans,* I, 164 (correction, 288); II, 289
Portrait of Tycho, A, *Fletcher G. Watson* and *Baron Otto Reedtz-Thott,* 451
Project Parsec Goes to Mars, *Robert Hillenbrand* and *Michael F. Ryan,* 464
Radio Galaxies and Quasars, *Louis C. Green,* 384
Recent Astronomical Research in China, *T. Kiang,* 260
Recent Findings About Planetary Nebulae, *Yervant Terzian,* 459
Sodium Cloud of Io, The, 479
Solar Halo Complexes, 185
Some Astrophotos To Enjoy, 283
Some Student Projects in Astronomy, 171
Soviet 6-meter Altazimuth Reflector, The, *Bagrat K. Ioannisiani,* 356
Space Highlights, 275
Space Shuttle in Free Flight, The, *J. Kelly Beatty,* 271
Structure in the Carina Nebula and Eta Carinae, *Nolan R. Walborn* and *Thomas E. Ingerson,* 22
Sundial at the San Diego Zoo, 25
Supernovae Today, *Louis C. Green,* 11
Tycho Brahe and the Great Comet of 1577, *Owen Gingerich,* 452
Ultraviolet Spectroscopy with Copernicus, *Theodore P. Snow, Jr.,* 371
Universe of Stamps, A, *George G. Young,* I, 366
Voyaging to the Outer Planets, *J. Kelly Beatty,* 95
Who Invented the Telescope? 163
Worldwide Burster Stakeout, 83

Authors

Africano, John, and *Robert Quigley,* What Is a Fabry Lens? 60
Allen, David A., An Astronomer's Impressions of Ancient Egypt, 15; letter, 362
Ammons, Doug, Rapid Changes in a Solar Prominence, 531
Ashbrook, Joseph, Astronomical Scrapbook, 20, 174, 365
book review, 323
Observations of Eclipses of Jupiter's Moons, 153
Babcock, Horace W., First Tests of the Irénée du Pont Telescope, 90
Baum, William A., book review, 416
Bayman, Kenneth C., letter, 188
Beatty, J. Kelly, book review, 52
Comsat Revolution, The, 4
Space Shuttle in Free Flight, The, 271
Voyaging to the Outer Planets, 95
Berger, Doug, NASA Is Host to Northern California Convention, 487
Bermanec, Vladimir, and *Dag Orsic,* Yugoslavian amateur activity, 394
Billaud, G., letter, 478
Bortle, John E., Comet Digest, 28, 107, 189, 270, 383, 467
Both, Ernst E., book review, 49
Botley, Cicely M., letter, 188
Carr, Bernard J., book review, 413
Colombo, Giuseppe, letter, 188
Cox, Robert E., book review, 229
Cox, R. E., and *R. W. Sinnott,* conductors, Gleanings for ATM's, 60, 140, 233, 328, 425, 521
Delvo, Pierino, A Spectroscope with a Holographic Grating, 65
di Cicco, Dennis, Eclipse at Sea, 470
see also *McDermott, Ashley*
Dickinson, Terence, book review, 517
Dilworth, Donald C., A New Catadioptric Telescope — I, 425; II, 521
Dunham, David W., letters, 288, 478
Dunham, Edward, see *Elliot, James L.*
Edwards, Nancy P., book review, 417
Elliot, James L., Edward Dunham, and *Robert L. Millis,* Discovering the Rings of Uranus, June, 1977; correction to, 173
Evans, David S., letter, 288 (correction, 517)
Photoelectric Observing of Occultations — I, 164 (correction, 288); II, 289
Federer, Charles A., Jr., book reviews, 133, 518
Fernie, J. D., book review, 131
Gingerich, Owen, book review, 227
Laboratory Exercises in Astronomy — The Crab Nebula, 378
Tycho Brahe and the Great Comet of 1577, 452
Green, Louis C., Cosmology Today, 180
Radio Galaxies and Quasars, 384
Supernovae Today, 11
Griffin, Roger, letter, 288
Gull, G. E., see *Houck, J. R.*
Harbour, David A., A Camera Mount for Projection Photography, 63
Heidmann, J., letter, 29
Heyn, Herman M., Stars Behind Bars, 296
Hillenbrand, Robert, and *Michael F. Ryan,* Project Parsec Goes to Mars, 464
Hirst, William P., letter, 288
Houck, J. R., and *G. E. Gull,* Cornell's 25-inch Training Telescope, 264
Houston, Walter Scott, Deep-Sky Wonders, 75, 155, 251, 347, 443, 539
Ingerson, Thomas E., see *Walborn, Nolan R.*
Ioannisiani, Bagrat K., The Soviet 6-meter Altazimuth Reflector, 356
Irwin, John B., book review, 509
Case of the Setting Sun, The, 167
J. A., see *Ashbrook, Joseph*
Janes, Kenneth, book review, 222
Keller, Hans-Ulrich, A New West German Planetarium, 375
Kiang, T., Recent Astronomical Research in China, 260
Korpikiewicz, Honorata, Polish amateur activity, 395
Kundu, M. R., book review, 136
Liller, Martha H., book review, 135
Longden, Jerry, letter, 288
Lovi, George, book review, 225
Rambling Through . . . (current month) Skies, 40, 120, 208, 304, 400, 494
Lowman, Paul D., Jr., book review, 54
Macdonald, Norman J., book review, 50
Marvin, Ursula B., book review, 315
Mayer, Ben, Projection Blinking: A Way Toward Discovery, 246
McDermott, Ashley, and *Dennis di Cicco,* Ninth Riverside Convention, 100
McKeon, Richard J., A Foucault Tester with Digital Readout, 140
Meeus, Jean, letters, 3, 478

Millis, Robert L., see *Elliot, James L.*
Mumford, George S., AN Ursae Majoris — Another AM Herculis? 194 (correction, 478)
Norton, O. Richard, Eight Feet of Solar Spectrum, 176
Orsic, Dag, see *Bermanec, Vladimir*
Overbye, Dennis, book reviews, 419, 512
Out from Under the Cosmic Censor: Stephen Hawking's Black Holes, 84
Papp, Janos, Bulgarian amateur activity, 393
Parker, Jack C., letter, 189
Pasachoff, Jay M., book review, 221
Pierce, David A., book review, 132
Prideaux, Jean P., letter, 188
Quigley, Robert, see *Africano, John*
R. E. C., see *Cox, Robert E.*
R. W. S., see *Sinnott, Roger W.*
Reed, George, letter, 362
Reedtz-Thott, Baron Otto, see *Watson, F. G.*
Righini, Marciano, letter, 288
Rizzo, Patrick, book reviews, 53, 319
Ryan, Michael F., see *Hillenbrand, Robert*
Schaaf, Fred, Jovian Moons: Naked-Eye Observations, 157
Sinnott, Roger W., Calculating a Mirror's Surface Accuracy, 144
Some Highlights of Stellafane, 328
see also *Cox, R. E.*
Snow, Theodore P., Jr., Ultraviolet Spectroscopy with Copernicus, 371
Swenson, G. W., Jr., letter, 3
Terzian, Yervant, Recent Findings About Planetary Nebulae, 459
Verschuur, G. L., book review, 135
Victor, Robert C., Bright Planets in the Predawn Sky, 45
Photography Project for the 1977-78 School Year, A, 215
Sun, Moon, and Planets This Month, The, 44, 126, 214, 310, 406, 504
Walborn, Nolan R., and *Thomas E. Ingerson*, Structure in the Carina Nebula and Eta Carinae, 22
Wall, John, The New 24-inch Reflector at Crayford, 233
Watson, Fletcher G., and *Baron Otto Reedtz-Thott*, A Portrait of Tycho, 451
Wenning, Carl, Jupiter and Saturn Begin Retrograde Motion, 311
Planets in the Morning and Evening Sky, 505
Westbrooke, William J., letter, 189
Wheatcraft, Steven, Finding Faint Planetary Satellites, 243
White, John, book review, 318
Young, George G., A Universe of Stamps — I, 366

Departments and Features

Amateur Astronomers —
Amateur Briefs, 114, 297
Astronomical League Observer's Package, 396
Autumn Astronomical Conventions, 114
California ATM Star Party, 204
Cornucopia of Calendars, A, 36
Correspondents Wanted, 489
Deep Sky Monthly, 300
Dimmer View of Things, A, 33
East European Amateur Activity, 393
Highlights of Spring Conventions, 112
NASA Is Host to Northern California Convention, 487
Opportunities for Students, 489
Some Notes from Summer Meetings, 200
Stars Behind Bars, 296
Stephen A. Walther, 396
Variable Star Kit, 204
Variable Star Observers Meet on Nantucket, 484
Astronomical Scrapbook —
Asaph Hall Finds the Moons of Mars, 20
Herschel's "Large 20-foot" Telescope, 174
Johann Dase and Some Other Mental Calculators, 365
Books and the Sky —
Aerospace Environment, The, Tom Beer, 50
Astronomy, W. M. Protheroe, E. R. Capriotti, and G. H. Newsom, 222
Astronomy for the Amateur, Vol. I: Planetary Astronomy, Rollin P. Van Zandt, 518
Atlas for Objective Prism Spectra, II, Waltraut Carola Seitter, 419
Atlas of Spectra of the Cooler Stars, An, Philip C. Keenan and Raymond C. McNeil, 419
Contemporary Astronomy, Jay M. Pasachoff, 132
Cosmic Frontiers of General Relativity, The, William J. Kaufmann, III, 413
Cosmology Now, Laurie John, editor, 131
Doctor Copernicus, John Banville, 53
Experiments in Astronomy for Amateurs, Richard Knox, 225
First Three Minutes, The, Steven Weinberg, 512
Geological Basis for the Exploration of the Planets, A, Ronald Greeley and Michael H. Carr, editors, 52
Gresham Lectures of John Flamsteed, The, Eric G. Forbes, editor, 227
Guidelines for Astronomy Courses, T. Michael Flick and others, 517
Joseph von Fraunhofer, Günter D. Roth, 49
Jupiter, Tom Gehrels, editor, 416
Lens in Action, The, Sidney F. Ray, 229
Observe and Understand the Sun, Russell C. Maag, Jerry M. Sherlin, and Rollin P. Van Zandt, editors, 221
On the Path of Venus, Lloyd Motz, 319
Radio Universe, The, J. S. Hey, 135
Red Limit, The: The Search for the Edge of the Universe, Timothy Ferris, 509
Solar Chromosphere and Corona, The: Quiet Sun, R. Grant Athay, 136
Solar Energy: The Awakening Science, Daniel Behrman, 133
Space Geology, Elbert A. King, 54
Sunlight Convergence Solar Burn, Charles Ross, 318
Tektites and Their Origin, J. A. O'Keefe, 315
Ten Faces of the Universe, Fred Hoyle, 135
Textbook on Spherical Astronomy, W. M. Smart, 323
Universe To Explore, A, Ralph O. Ewers and Lynda M. Ewers, 417
Calculator Programs, 27, 292
Celestial Calendar —
Beehive and Mars, The, 408
Bright Planets in the Predawn Sky, 45
Eclipse Predictions for Jupiter's Moons, 216, 506
Favorable Minimum of Theta[1] Orionis A, A, 409
Jupiter and Saturn Begin Retrograde Motion, 311
Jupiter's Satellites, 126, 216, 310, 406, 506
Mercury Reappears, 409
Meteors, 46, 312, 508
Minima of Algol, 46, 128, 217, 312, 409, 507
Moon Phases and Distances, 46, 128, 216, 312, 409, 507
Occultation Predictions, 45
Perseids and Two Other August Showers, The, 127
Photography Project for the 1977-78 School Year, A, 215
Planets in the Morning and Evening Sky, 505
September's Lunar Eclipse, 217
Three Meteor Showers To Observe in November, 407
Three Morning Planets, 128
Variable Star Maxima, 46, 128, 217, 312, 409, 507
Venus and Spica in the Dawn Sky, 312
Comet Digest, 28, 107, 189, 270, 383, 467
Front-cover photographs —
Dawn of the Space Shuttle, 257
Earthshine and Venus, 81
Great Pyramid at Night, The, 1
Light for a Solar Spectrum, 161
Stamps and Stars, 353
Tycho Brahe at 50, 449
Gleanings for ATM's —
Calculating a Mirror's Surface Accuracy, 144
Camera Mount for Projection Photography, A, 63
Change in Gleanings Editorship, 521
Foucault Tester with Digital Readout, A, 140
New Catadioptric Telescope, A, I, 425; II, 521
New 24-inch Reflector at Crayford, The, 233
Some Highlights of Stellafane, 328
Some Very Large Amateur Telescopes, 240
Spectroscope with a Holographic Grating, A, 65
What Is a Fabry Lens? 60
In the Current Journals, 105, 191, 267, 363, 468
Letters, 3, 188, 288 (correction, 517), 362, 478
New Books Received, 56, 138, 230, 324, 422, 519
News Notes —
Alaskan Meteorite Crater, 107
Alpine Fireball, 277
Brouwer Award, 364
Change of Directors at Hale Observatories, 363
CM Draconis: A Very Useful Eclipsing System, 26
Coming Occultations by Uranus' Rings, 267
Consequences of Meeting a Dense Interstellar Cloud, 193
Disappearing Nebula, The: A Star Turns On? 268
Double Star Discoverer, 27
Dwarf Galaxy in Carina, 105
Extragalactic Water Hole, An, 108
Faint Variable Star, 469
56-minute Variable Star, A, 267
Flashes of Light from the Vela Pulsar, 26
Funding for Space Telescope and Jupiter Mission, 191
Gamma-Ray "Stars," 192
Halley's Comet, 363
H. A. Rey, 267
International Flare-Star Campaign, 468
Is the Star MWC 349 Forming a Planetary System? 363
Length of the Solar Cycle, 106

Long-Range Martian Forecast, The, 468
Long-Term Stability of the Earth-Moon System, 19
Maria Mitchell Directorship, 166
Meteorite Fall in Iraq, 364
Milky Way's Tiny Heart, The, 267
New England Astronomer, 191
New Head of Allegheny, 277
Northernmost Observatory, 269
Notes About Minor Planets, 193
Nova Ophiuchi 1977, 382
Old Woman Meteorite, 192
Planetarium Directory, 27
Radar Detection of Ceres, 458
Rocket Pioneer, 193
Satellite Tracker Dies, 463
Soviet Variable Star Specialist, 500
SS Cygni and the Rapid Burster, 364
Striations on Phobos, 269
Supernova Remnant in an Open Cluster, A, 266
2.1-meter Reflector for Argentina, 27
Unseen Companions of 61 Cygni? 191
X-Rays from Superclusters of Galaxies, 105
Zooming in on Phobos and Deimos, 469
Observer's Page —
Colorful Groupings of the Bright Planets, 536
Deep-Sky Wonders, 75, 155, 251, 347, 443, 539
Finding Faint Planetary Satellites, 243
Good Year for Perseids, A, 435
Jovian Moons: Naked-Eye Observations, 157
Morning Sky Configurations, 343
Notes on the Lunar Eclipse of September 27th, 533
Note to Photographers, 28
Observations of Eclipses of Jupiter's Moons, 153
Observers' Notebook, 74, 156
Occultation of Mercury, 442
Projection Blinking: A Way Toward Discovery, 246
Rapid Changes in a Solar Prominence, 531
Solar Activity Increases, 339
Sunspot Numbers, 76, 157, 252, 348, 444, 532
Venus, Mars, and the Moon Come Together, 150
Venus Passes Inferior Conjunction, 70
When the Lights Went Out, 252
Rambling Through . . . (current month) Skies, 40, 120, 208, 304, 400, 494
Southern Stars, 211
Stars for . . . (current month), 40, 120, 208, 304, 400, 494
Sun, Moon, and Planets This Month, The, 44, 126, 214, 310, 406, 504

Selected Topics and Celestial Objects

This listing is not intended to be exhaustive and does not supplant the other parts of the index. For example, material in such regular features as Books and the Sky is ordinarily indexed only under the Departments and Features section.

Amateur astronomers: AAVSO, 112; Astronomical League regions, 112; astrophotography competition, 283; Czechoslovakian, 441; Herschel clubs, 33; in eastern Europe, 393; NAA at Boulder, 278; Riverside, Calif., 100; San Francisco, 112; Stellafane, Vt., 328
Artificial satellites and spacecraft: communications satellites, 4; Copernicus, 371; COS B, 192; HEAO 1, 275; Intelsat IVA, 466; NASA funding, 191; orbital test, 466; Oscar series, 288; Space Shuttle tests, 271; Sputnik 1, 259; Vanguard TV-3, 466; Voyager 1 and 2, 275
Asteroids: newly numbered, 193; occultations of stars by, 288; 69 Hesperia, 478
Astrolabes, modern: 261, 478
Atmospheric optics: halo complexes, 185
Black holes: Stephen Hawking and, 84
Calculator programs, astronomical: 27, 292
Calendars: booklets, 36
China: recent research in, 260
Clusters: Open — Perseus Double, 35; M11, 155; NGC 559, 266; NGC 6682, 155; NGC 6683, 155; NGC 7209, 347; NGC 7243, 347; NGC 7245, 348; NGC 7296, 348; IC 1434, 347. Globular — Omega Centauri, 93; M9, 76; M10, 75; M13, 75; M14, 75; M30, 251; M72, 251; M75, 251; M92, 75; NGC 6342, 76; NGC 6356, 76; NGC 6366, 76
Comets: of 1577, 452; P/Encke, 28, 107, 189, 270; P/Halley, 363; P/Schwassmann-Wachmann 1, 270; P/Grigg-Skjellerup, 1977b, 28, 107; Helin, 1977e, 28; P/Ashbrook-Jackson, 1977g, 107; P/Arend-Rigaux, 1977k, 467; P/Chernykh, 1977l, 383, 467; Kohler, 1977m, 270, 383, 467; P/Schuster, 1977o, 467
Conjunctions and configurations: moon and planets, 150, 536; Venus, Jupiter, and Mars, 343
Constellation study: Ophiuchus, 40; Scutum, 120; star colors, 304
Cosmology: black holes, 84; survey of, 180
Double and multiple stars: discovered in occultations, 290; 61 Cygni, 191
Eclipses: timing partial solar, 189; September 27, 1977, penumbral lunar, 533; October 12, 1977, solar, 470
Education: projects, 171; Project Parsec, 464
Galaxies: dwarf Carina, 105; Karachentsev 25, 29; radio galaxies and quasars, 384; Stephan's Quintet, 34; superclusters, 105; M31, 539; M33, 108, 539; M51, 287; M63, 11; M74, 443; M101, 13; M104, 93; NGC 128, 444; NGC 524, 443; NGC 2997, 92; NGC 3109, 92; NGC 4567-8, 287; NGC 5907, 33; NGC 7331, 34, 348; NGC 7541, 444
Gamma-ray astronomy: 192
History: ancient Egypt, 15; comet of 1577, 452; Fraunhofer, J., 49; Hall, A., and Martian satellites, 20; Herschel 20-foot telescope, 174; invention of telescope, 163; mental calculators, 365; Tycho Brahe portrait, 451
Jupiter: photographs, 63, 74. Satellites — eclipse timings, 153; Io's sodium cloud, 479; naked-eye sightings, 157; photograph of VI, 243
Mars: Deimos' picture, 469; discovery of satellites, 20; grooves on Phobos, 269, 469; temperature evolution, 468
Meteorites: Alaskan crater, 107; Gibeon, South West Africa, 188; Old Woman, California, 192, 288; Tazzeh, Iraq, 364
Meteors: Czechoslovakian fireball, 475; Pegasus shower?, 127, 441; Perseid observations, 435; Swiss fireball, 277
Milky Way galaxy: core, 267
Moon: Clavius, 284; Copernicus, 283; Mare Humorum, 285; photograph, 64; stability of orbit, 19; Straight Wall, 286; Werner, 171
Nebulae: Crab, 287, 378. Dark — B 92, 156; B 112, 155. Eta Carinae, 22; Footprint, 156; Horsehead, 540; variable, 268; NGC 6334, 94; IC 133, 108. Planetary — recent studies, 459; NGC 7009, 251; NGC 7293, 460
Neptune: satellite Triton photographed, 245
Novae: Ophiuchi 1977, 382
Observatories: Hartung-Boothroyd, 264; Las Campanas, Chile, 90; Mount Hopkins, 9; Purple Mountain, China, 263; Skibotn, Norway, 269; Special Astrophysical in U.S.S.R., 29, 356
Observatories, public: Binghamton, N.Y., 299
Occultations: of Mercury, August 16-17, 1977, 442; photoelectric work, 164, 289; value of visual work, 478
Personal notes: Belserene, E. P., 166; Cave, S., 362; Cox, R. E., 521; Dase, J., 365; Gatewood, G. D., 277; Hall, A., 20; Hawking, S., 84; Kukarkin, B. V., 500; Rey, H. A., 267; Rossiter, R. A., 27; Schmidt, M., 363; Smiley, C. H., 191; Szebehely, V., 364; von Braun, W., 193; Walther, S. A., 396; Werner, A., 463
Photography: prizewinning astrophotos, 283; projection blink comparator, 246
Pi: to 200 decimal places, 365
Planetariums: directory, 27; operators' societies, 112; Stuttgart, W. Germany, 375; Tucson, Ariz., 176
Planets: daytime sightings, 156; eight north of ecliptic, 3; finding faint satellites, 243
Pulsars: Vela, 26
Quasars: and radio galaxies, 384
Radio astronomy: galactic center, 267; man-made interference, 3, 189; supernova remnant, 266; Vela pulsar, 26; water vapor in M33, 108
Saturn: eclipses of Iapetus by rings, 190; satellites photographed, 244
Space (see Artificial satellites and spacecraft)
Stamps, astronomical: 366
Stars: diameters from occultations, 289; MWC 349, 363; seeing faint, 74; ultraviolet spectra, 371
Sun: activity in June, 339; interaction with interstellar cloud, 193; mean cycle length, 106; prominence of September 9, 1977, 531; spectrum, 65, 176; sunset phenomena, 167
Sundials: at San Diego Zoo, 25
Supernovae: recent studies, 11; remnant in open cluster, 266
Tektites: 315
Telescopes and telescope making: amateur's solar spectroscope, 65; digital readout, 140; Fabry lenses, 60, 288; Foucault tester, 140; Herschel 20-foot, 174; invention, 163; MMT, 9; mirror surface accuracy, 144; projection blink comparator, 246; projection-photography rig, 63; Riverside convention, 100; Stellafane convention, 328; very large amateur, 240; 16-inch catadioptric, 425, 521; 24-inch fork-mounted reflector, 233; 25-inch training, 264; 2.1-meter Argentine, 27; 2.5-meter du Pont, 90; 6-meter Soviet, 29, 356
Ultraviolet astronomy: with Copernicus satellite, 371
Uranus: rings, 188, 267; satellites photographed, 244
Variable stars: 56-minute, 267; flare stars, 288, 468, 469; YZ Canis Minoris, 468; AG Carinae, 459; Eta Carinae, 24; SS Cygni, 364; CM Draconis, 26; Theta[1] Orionis A, 409; AN Ursae Majoris, 194
Venus: morning and evening star on same day, 70
X-ray astronomy: bursters, 83, 364; Nova Ophiuchi 1977, 382; superclusters of galaxies, 105